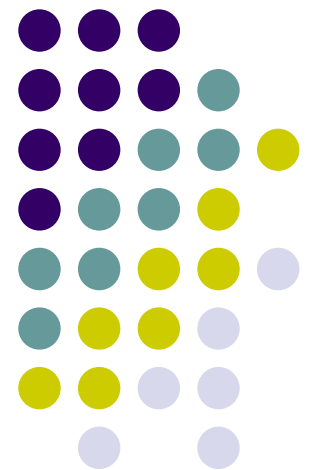
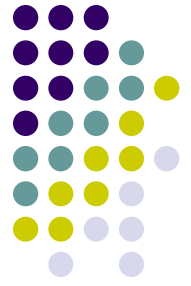


WTD Summer Internship Construction Management

Megan Pence
Washington State University

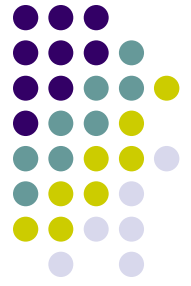


Projects Worked On



- Juanita Bay Pump Station
- All new station located in the Juanita neighborhood of Kirkland
 - Right on Lake Washington

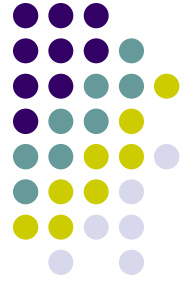




Reasons for New Station

- Replace aging pump station to ensure safe and reliable operations.
- Address critical capacity needs by increasing the pumping capacity from 14.2 million gallons per day (mgd) to a peak capacity of 30.6 mgd.
- Meet current design standards, including odor and noise control.





Challenges of Project



Juanita Bay Pump Station
Brown & Caldwell - HDR - Belt Collins



- Coordinating efforts between all groups involved.
 - Contractors
 - Sub-contractors
 - King County
 - City of Kirkland
 - Internal Politics
- Budget, Time Lines, Scheduling

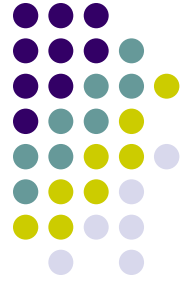


Photos from the Inside

- Inside the Pump Station
- Crane Room
 - Has the ability to lift out pumps, and equipment three stories under ground.

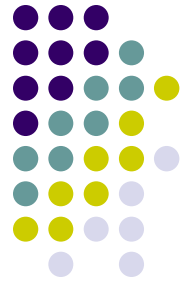


Juanita Bay P.S.

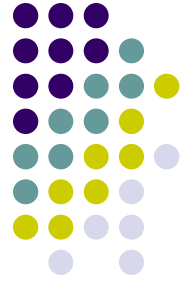


- Master Control Panel (MCP) Room
- Each panel will be electronically controlled from the Renton Plant
 - Making the Pump Station fully operational without being manned.

Juanita Bay P.S.



- Construction on Stage 3 of Juanita Bay.
 - Installation of Panels
- Stage 2
 - Installed pumps
 - Approximately 60 feet underground.

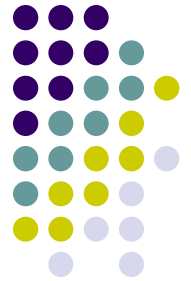


Juanita Bay P.S.



- Generator Room
- Detroit Diesel Generator
- Fan and Muffler System
- Noise trapping apparatus' installed, and also remotely controlled.

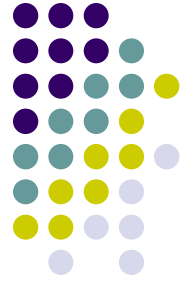




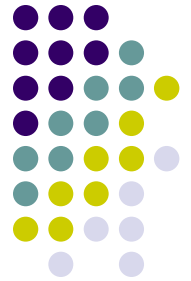
Reclaimed Water Pipeline

- To establish the Reclaimed Water Pipeline that would flow from Brightwater and be distributed to the Sammamish Valley.
- Project will be operational in 2011 shortly after the start-up of Brightwater.
- Section 2 of the RWP includes work at...
 - Kenmore Pump Station,
 - Manhole replacement and improvements in Bothell,
 - Woodinville,
 - Pump and Gravity Drain work in Bothell,
 - All including installation of pipeline in Redmond and Unincorporated King County.

Surrounding Area

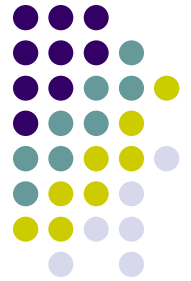


- Local agri-businesses are located throughout the Sammamish Valley, including various nurseries, farm land, sod growers, and vineyards.
- Other businesses including the Red Woods Golf Course and the Lake Washington Soccer fields will benefit as well.
- This will greatly improve irrigation throughout drought seasons.
- Roughly 177 million gallons of reclaimed water will be utilized by this project.



Reclaimed Water Pipeline

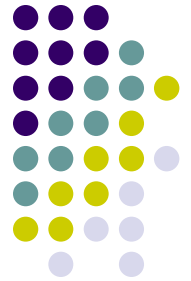
- My focus was dealing with permits, all jurisdictions and boundaries.
- Permit “Intermediary”
 - Intermediary between contractors and government entities.
 - Each progress meeting included a matrix based on Contractor’s Look Ahead schedules, and laid out who was to be notified and what stipulations were outlined within each permit, based on jurisdiction.



Reclaimed Water Pipeline

- Challenges with Construction.
 - Multiple jurisdictions
 - Redmond, Unincorporated K.C., Woodinville, Kenmore, Bothell
 - Various Permits
 - Clearing/Grading, Shoreline Substantial Development, General Access WSDOT, ROW, K.C. DDES, and Personal Property Access Permits, and various others.

Brightwater Influent Pump Station



- Includes a tunnel over 200 feet under ground and runs over 3 miles long.
 - Extending all the way to Brightwater.
- Tunnel Boring Machine
 - 16” foot diameter tunnel
 - Hauling “sludge” out of tunnel on locomotive,
 - Also personnel, equipment, sludge, etc.
 - Segments are constructed inside the tunnel.
 - The TBM pushes off the previously constructed rings to propel the machine forward.

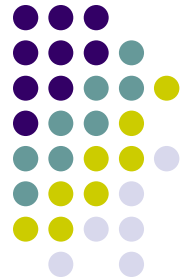
Brightwater I.P.S.



- Shaft and TBM at the North Creek IPS.



Brightwater I.P.S.



- Tunnel to the TBM
 - Ventilation, Loco. Tracks, Emergency Stands.
 - 1 ft. wide walkway.
- Gantries looking away from TBM.
 - Above is sludge conveyor.
 - Equipment and electrical elements all included.
 - Everything including personnel brought in on locomotive.

